Apr. 3, 1923.

1,450,440

P. HUDSON

RATCHET DEVICE FOR AUGERS

Filed Feb. 25, 1922

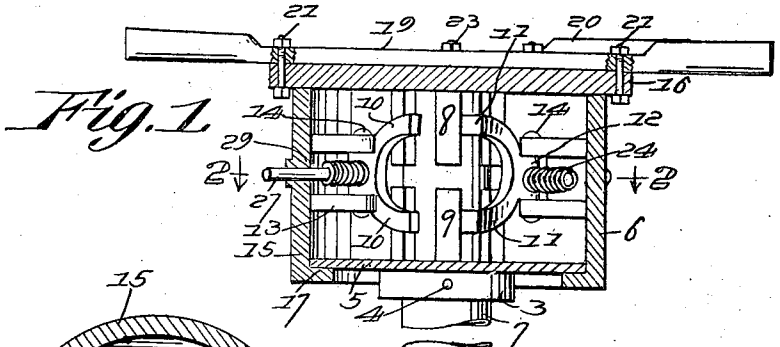


Fig. 1.

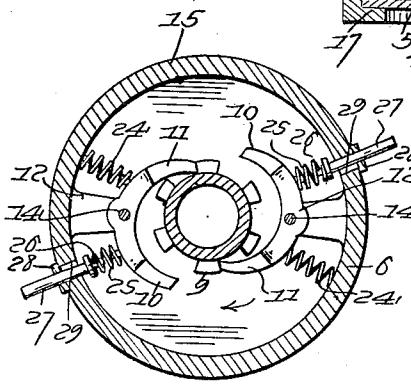
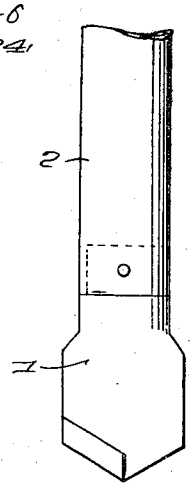


Fig. 2.



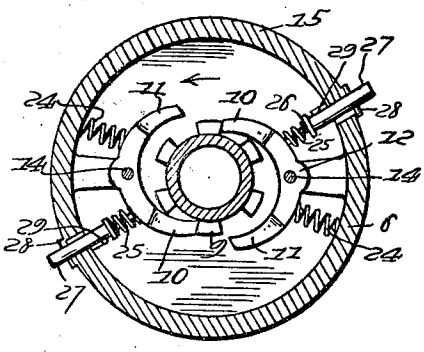


Fig. 4.

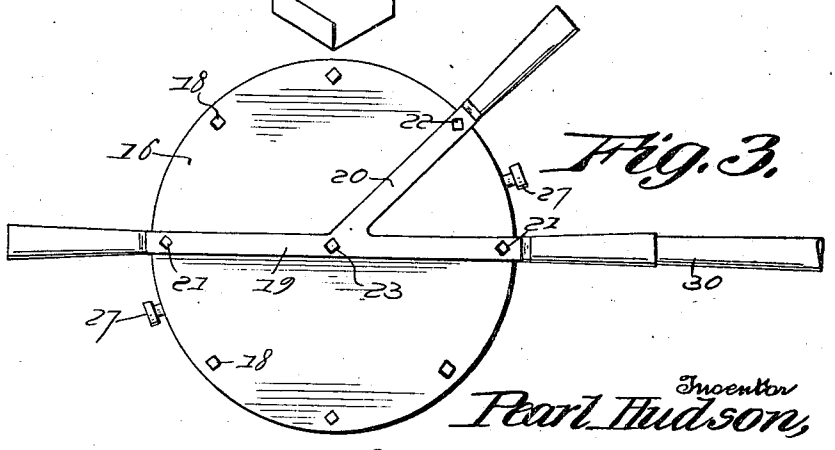


Fig. 3.

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UNITED STATES PATENT OFFICE.

PEARL HUDSON, OF BURLINGTON, IOWA.

RATCHET DEVICE FOR AUGERS.

Application filed February 25, 1922. Serial No. 539,219.

To all whom it may concern:

Be it known that I, PEARL HUDSON, a citizen of the United States, residing at Burlington, in the county of Des Moines and State of Iowa, have invented certain new and useful Improvements in Ratchet Devices for Augers, of which the following is a specification, reference being had to the accompanying drawings.

Heretofore post hole digging augers have been so constructed that the hands of the operator are very often scratched by the fence wire, when digging post holes, therefore it is the purpose of the present invention to provide a device of this kind to avoid such disadvantages, and at the same time enable the auger to be readily rotated in either direction.

Another purpose consists in the provision of a ratchet device which is operatively connected on the upper end of the uppermost section of the tubular rod of an auger shaft, so as to permit the auger at the base of the shaft to be rotated, it being obvious that the shaft consists of a plurality of sections, enabling additional sections to be inserted, to extend the shaft, as the post hole deepens.

Still another purpose is the provision of a housing swiveled on the upper end of the uppermost section of the shaft, and containing spring tensioned ratchet dogs, which may be adjusted to operate in either direction, whereby the sectional tubular shaft may be rotated in either direction, that is, to rotate in a direction to bore the hole, and in a direction to extract the auger, after the desired depth has been reached.

A further purpose is the provision of a casing or housing on the upper end of the uppermost section of the tubular shaft containing the ratchet means therein for operating the shaft, together with socketed members secured to the upper face of the casing or housing, for the purpose of rotating the same, it being obvious that the ratchet means may be manually manipulated, whereby it may be adjusted for operation in either direction.

While the design and construction at present illustrated and set forth are deemed preferable, it is obvious that as a result of a reduction of the invention to a more practical form for commercial purposes, the invention may be susceptible of changes, and the right to these changes is claimed, provided they are comprehended within the scope of what is claimed.

The invention comprises further features and combination of parts, as will be hereinafter set forth, shown in the drawings and claimed.

In the drawings:—

Figure 1 is a vertical sectional view through the upper end of the improved ratchet device showing a sectional tubular auger shaft, showing the auger at the lower end of the shaft;

Figure 2 is a cross sectional view on line 2—2 of Figure 1;

Figure 3 is a plan view, wherein the socketed handles or members are disposed, for receiving a detachable handle;

Figure 4 is an enlarged detail sectional view of the housing or casing, showing the ratchet dogs disposed just the opposite to that shown in Figure 2, illustrating how the auger may be reversed in its operation.

Referring to the drawings, 1 designates a conventional form of post hole digging auger including a plurality of tubular shaft connections 2, which may be connected to extend down in the hole as it is being bored. In fact as the hole deepens other shaft sections may be added. The upper tubular shaft section has a collar 3, which may be fastened to the shaft section by means of a pin or the like 4, for the purpose of supporting a circular plate 5, which closes the lower end of a housing or casing 6. Formed integrally with the upper extremity of the upper tubular shaft section 7 a short distance above the collar is a plurality of upper and lower lugs 8 and 9. These lugs project radially from the upper extremity of the upper tubular shaft, and are adapted to be engaged by the arms 10 and 11 of the ratchet dogs 12 and 13, which are pivotally supported at 14 at diametrically opposite portions on the interior of the casing or housing 6. The dogs 10 cooperate with the lugs 8 and 9 when the tubular shaft section is being rotated in one direction, and when the dogs are reversed in their positions, the ends 11 of the dogs cooperate with the lugs 8 and 9 to rotate the tubular shaft in the opposite direction.

The lugs 8 and 9 are formed integrally with the upper extremity of the tubular shaft section 7, and in order to assemble the ratchet device, the plate 5 is first applied to the upper tubular shaft section, by in-

serting the section through the plate. The collar 3 is then telescoped over the lower end of the upper tubular shaft section until it contacts with the under surface of the plate 5. The pin 4 is then inserted through the collar and the shaft section, so as to hold the collar fast.

The housing or casing 6 comprises a body portion 15 and its cover plate 16, and the lower portion of the cylindrical wall of the housing or casing terminates in an annular inwardly turned flange 17, which underlies the plate 5. After applying the plate 5 and the collar 3, the body of the housing or casing 6 is then slipped over the upper tubular shaft section, until the annular lateral flange 17 contacts with the plate 5. The cover plate 16 is then connected to the body of the housing or casing, by the fastening screws 18.

Extending across the upper face of the cover plate 16 is a transverse handle holder 19, which has an additional holder 20 projecting at an acute angle from the holder 19. The main and auxiliary holders 19 and 20 are secured by bolts 21 and 22 to the cover plate 16. Also a suitable screw bolt 23 is engaged through the main handle holder and through the cover plate, and is threaded into the upper end of the uppermost shaft section. The upper extremity of this uppermost shaft section is solid, to permit the screw bolt to be threaded thereto, for the purpose of additionally holding the cover plate in place, as well as the handle holders, and also for holding the casing or housing in position. In fact the cover plate rests upon the upper extremity of the upper tubular shaft section, and since the body of the housing or casing 6 is secured to the cover plate, the inturned lateral flange 17 will be held against the under surface of the plate 5.

As previously stated the ratchet dogs are pivotally mounted at 14 on the interior of the housing or casing in diametrically opposite positions. Each dog is provided with arms or forks 10 and 11 at its opposite ends. As previously stated these forks are in pairs, hence they will engage the upper and lower lugs 8 and 9.

Tension springs 24 are interposed between the arms or forks 11 and the wall of the housing or casing, thereby tensioning upon the dogs, to hold the arms or forks or lugs 11 in contact with the lugs 8 and 9, as the ratchet device is rotated in one direction.

Springs 25 are connected to the dogs or arms 10, and these springs are in turn partly telescoped onto the inner extremities 26 of the radial rods 27. This pin or rod 27 is mounted in a guide 28 of the housing or casing, and may be forced inwardly, to depress the spring 25 and increase its tension. The pin or rod 27 has a shoulder 29 which engages the inner surface of the wall of the casing or housing 6 and holds the pin depressed. The increasing of the tension of the spring 25 causes the dog to tilt on its pivot so that the extremities of the arms or lugs 10 may cooperate with the lugs 8 and 9 on the upper extremity of the uppermost tubular shaft section, so that when the casing or housing 6 is rotated in the desired direction, the rotation of the tubular shaft may be reversed. The release of the pin or rod 27 will permit the tension of the spring 24 to tilt the dog, whereby the extremities of its arms or lugs 11 may engage the lugs 8 and 9 of the uppermost tubular shaft section, allowing the shaft to be rotated in the desired direction to bore the post hole.

After the circular plate 5 has been placed in position and the collar 3 fastened by the pin 4, the housing or casing 6 is then slipped over the lower end of the tubular shaft section, until the flange 17 engages the under surface of the plate 5, then the cover 16 is secured to the housing, and since the cover 16 rests upon the upper end of the uppermost tubular shaft section, the housing or casing is held securely in place. In order to rotate the housing or casing and also the tubular shaft, a handle 30 may be inserted in any one of the socketed handle holders 19 and 20. In fact the handle 30 is inserted first in one socket, and then in another, until the auger has been operated sufficiently, and the post hole bored to the desired depth. The casing or housing and its tubular shaft is then rotated in the opposite direction, in order to remove the auger.

The invention having been set forth, what is claimed is:—

1. The combination with a member to be rotated provided with a plurality of upper and lower radial lugs, of a casing swivelly connected to the upper extremity of said member and provided with means for rotating the same, a pair of diametrically opposite ratchet dogs pivotally mounted in said casing, each having at its ends forks or arms, either set adapted to cooperate with the upper and lower lugs of said member, to rotate the same, tension means to hold one end of each dog normally depressed whereby the extremities of the arms or forks may cooperate with the upper and lower lugs, and means for urging pressure on the opposite ends of the ratchet dogs to tilt the same to permit the other set of forks or arms to cooperate with the lugs.

2. The combination with a member to be rotated provided at its upper extremity with upper and lower radial lugs, of a casing swivelly connected to the extremity of said member and housing said lugs, a ratchet dog pivotally mounted in said casing and provided with projections, a pair at each end, tension means urging pressure upon one end of the dog to hold one pair of projections in cooperation with the lugs of said member,

and means to overcome the first tensioning means to depress the other end of the dog to urge its pair of projections in cooperation with the lugs of said member, and means carried by the casing, for rotating it in either direction.

3. The combination with a member to be rotated provided with upper and lower radial lugs, of a casing housing said lugs and being swivelly connected to the upper extremity of said member, means to support the casing and prevent axial movement thereof relatively to the member, a ratchet dog pivotally mounted in said casing and provided with projections, a pair at each end, tensioning means bearing upon one end of the ratchet dog to hold its respective projections normally in cooperation with said lugs, and means for urging pressure against the other end of said ratchet dog to cause the other set of projections to engage said lugs, and disengage the first set of projections, enabling the casing to be rotated in the reverse direction, and means for rotating the casing in either direction.

4. The combination with a member to be rotated provided with upper and lower radial lugs, of a casing housing said lugs and being swivelly connected to the upper extremity of said member, means to support the casing and prevent axial movement thereof relatively to the member, a ratchet dog pivotally mounted in said casing and provided with projections, a pair at each end, tensioning means bearing upon one end of the ratchet dog to hold its respective projections normally in cooperation with said lugs, a tensioning device bearing upon the other end of said ratchet dog, a depressible pin for increasing the tension of said device, to cause the ratchet dog to tilt upon its pivot, whereby the other set of projections may engage the lugs of said member, and the first set disengaged, enabling the casing to be rotated in the opposite direction.

5. The combination with a member to be rotated provided with upper and lower radial lugs, of a casing housing said lugs and being swivelly connected to the upper extremity of said member, means to support the casing and prevent axial movement thereof relatively to the member, a ratchet dog pivotally mounted in said casing and provided with projections, a pair at each end, tensioning means bearing upon one end of the ratchet dog to hold its respective projections normally in cooperation with said lugs, a tensioning device bearing upon the other end of said ratchet dog, a depressible pin for increasing the tension of said device, to cause the ratchet dog to tilt upon its pivot, whereby the other set of projections may engage the lugs of said member, and the first set disengaged, enabling the casing to be rotated in the opposite direction, and means for holding said pin depressed, thereby holding the tension of said device, to hold the ratchet dog tilted, and means for rotating the casing.

In testimony whereof I hereunto affix my signature.

PEARL HUDSON.